Amendments to the Specification

In the Brief Description of the Drawings (the paragraphs, as amended, are shown):

In the first paragraph:

Figure 1 shows a fluid level sensing element comprising a pair of electrical conductors 1 and 2, attached to a thin, flexible dielectric substrate 3, and forming a capacitance that can be measured between connections 4 and 5.

In the second paragraph:

Figure 4 shows the sensing element of figure 3a, with~~mounted via~~ an adhesive-backed tape 7~~,~~ attached to the back surface of the sensing element, thereby mounting it to dielectric wall 8, of a vessel. Figure 5 is a detail of the sensing element of figure 3, together with the adhesive-backed tape 7 attached to its back surface, which was shown in figure 4. On the edge view to the right in figure 5, a spacer, 28, is attached to the front surface of the sensing element, and a shield, 27, is attached to the spacer.

In the fifth paragraph:

Figure 8 shows a capacitive fluid level sensing element 12, which can be fabricated in any of the conductor patterns of the previous figures, or another capacitive sensing element conductor pattern, fully embedded within dielectric wall 13, with spacing 14 facing the measured liquid level, and spacing 16 facing the outside of the vessel or the inside of a device utilizing fluid level information, such as a bilge pump.

In the ninth paragraph:

Figure 12 shows a capacitive sensing element structure comprising interdigital comb conductors 1 and 2, embedded within dielectric material 25, with ~~spaces~~gaps (such as openings or depressions) 26 formed into the dielectric material 25.

In the Detailed Description of the Invention:

Add a new second paragraph:

Prior Art capacitive fluid level sensors that sense a fluid through the thickness of a dielectric material, obtain their ability to do so through minimizing the thickness of the dielectric material, or through the use of additional conductors placed between adjacent conductors of the sensing element. Contrary to capacitive sensors of Prior Art, the present invention obtains this ability through the spacing of the conductors and the ratio of the spacing to the average width of the individual conductors. These spacing and widths are defined with respect to the thickness of the dielectric wall between the sensing conductors and the fluid.

In the next paragraph, to be paragraph 3, as amended:

When a sensing element is attached to a dielectric wall as shown in figure 4, the sensing element may use an adhesive-backed tape to enable the attachment. Figure 5 shows three views of such a construction. The view from the back is looking through a semi-transparent adhesive-backed tape. The tape provides the sticky surface that would attach to a dielectric wall. The view from the front is the view one could observe after the sensing element is mounted, but before adding a spacer and shield. The view from the edge shows the conductors, 1, 2, the dielectric substrate to which the conductors are mounted, 3, and the adhesive-backed tape, 7, a spacer, 28, and shield, 27. The spacer is formed of a low permittivity material such as a foamed plastic. The shield is formed of an electrical conductor, such as a thin brass sheet. Alternatively, the sensing element may be embedded within a dielectric wall of the vessel, so that spacer 28 is formed of a part of the dielectric wall.

At the end of paragraph 5, as amended:

In the first preferred embodiment, according to figure 7, the level of the fluid contained within vessel 9, is indicated by the capacitance measured between the electrodes 1, 2. If the thickness of the tank wall 8, is relatively thin, such as 1 mm, the spacing between adjacent electrodes can be relatively small, such as 2mm. This provides more sensitivity to the liquid, which means that a greater capacitance is measured than would be if the electrode spacing was greater. If the wall is thicker, for example 3mm, then the field of the sensor must be larger in order to penetrate the wall. This requires greater electrode spacing, for example 6mm. The loss of sensitivity due to wide spacing of electrodes can be recovered by increasing the number of electrodes, connected in parallel or series, used to make the measurement. This assumes that enough space is available for positioning of the additional electrodes. It is preferred that the ratio of electrode spacing 6, to the width of an individual electrode conductor 1, 2, must be relatively large, such as four or more.

A preferred spacing is two times the thickness of dielectric wall 8. Other spacings may be used. A smaller spacing leads to an increase in capacitance measured between connections 4, 5, but also leads to a decrease in the dependency of the capacitance value on fluid level. A larger spacing decreases the capacitance, but increases the dependency of the capacitance on fluid level until the spacing approaches four times the thickness of dielectric wall, 8. Spacing greater than two times the thickness of the dielectric wall also leads to a periodic nonlinearity as shown in figure 13. Such greater spacing may be desirable, however, to minimize the effects of the dielectric material, at the expense of measurement nonlinearity.

In the detailed description of figure 8 on page 12:

A second preferred embodiment is shown in figure 8, as a capacitive fluid level sensor 12, embedded within a dielectric portion, 13, herein called the wall, of a device, 19, that utilizes fluid level information, such as a bilge pump. In this case, the fluid level 15, to be measured is located adjacent to the wall, with spacing 14. Spacing ~~15~~ 16 is between the sensing element and the interior of the device. This second preferred embodiment of the present invention is also shown in figure 10, in which item 23 is the area in which the sensing element is embedded. This arrangement is contrary to the prior art method of operating such a device by means of a float switch as shown in figure 9.

In the last paragraph:

A guard or shield, as shown in the edge view of figure 5, is sometimes beneficial in order to reduce sensitivity of the sensing element to electrical disturbances on the side of the sensing element that is opposite the measured fluid. An alternative configuration to that of figure 5 is shown in f~~F~~igure 15, in which shield~~-shows such a conductor~~ 27, ~~with~~is an electrical conductor, and is positioned by spacers 28, to maintain spacing from the sensing element. Conductor 29 is used to make connection to ground or to the electronic circuit module. When used as a guard instead of a grounded shield, the conductor, 27, may be driven at the same potential as an electrode of the sensing element. Guard driving circuits are not described here, as they are old in the art.